

Space Technology for Patient Monitoring



Headquartered in Clarence, New York, Mennen Medical Inc. is one of the world's leading manufacturers of patient monitoring equipment for hospitals. The firm has a main plant in Clarence, another in Israel, and sales offices in North America, Europe and Australia. Its systems are installed in medical institutions all

over the world, including China and the Soviet Union. The company employs some 500 people and records sales on the order of \$40 million annually.

All that started with a contract for development of an astronaut monitoring system in the early days of the space program. That work provided a foundation in telemetry and other physiological monitoring technologies that led to development of a broad line of computerized medical electronic systems used by hospitals in intensive care units, operating and recovery rooms, neonatal and pediatric units, emergency rooms, shock/trauma units and special procedure facilities.

The guiding hand behind Mennen Medical's consistent growth is that of founder, president and chairman of the board Herbert Mennen. An electrical engineer, Mennen started his career in 1950 with Bell Aircraft Corporation, Buffalo, New York, where he helped develop the nation's first fully automatic aircraft landing system.

In 1957, Mennen and three other Bell engineers formed Sierra Research Corporation and Mennen served as its vice president and director of engineering for several years. It was during this period that he met Wilson Greatbatch, who had invented a cardiac pacemaker, and the two teamed on the astronaut monitoring system. The technologies they developed in that program had clear applicability to another important need — round-the-clock monitoring of hospital patients from central stations equipped with displays of vital signs transmitted wirelessly from bedsides, reducing the time needed for personal attendance by physician or nurse.

"We decided that the real application was on Earth and not in space," says Mennen. "There are only so many astronauts but there are a lot of hospitals."

That decision prompted formation by Mennen and Greatbatch

Among spinoffs in the field of medicine is a steadily-growing company producing a variety of medical electronics for improved patient care

— in 1963 — of a company that continued their work on space/medical instrumentation but also initiated a pioneering effort in medical electronics. Greatbatch subsequently left the firm to pursue other interests.

Mennen Medical was the first to adopt total solid state design in patient monitoring equipment and the first to offer multipatient telemetry monitoring. In 1971, the company introduced the first computer-assisted monitor for multipatient arrhythmia, or erratic heart action. More recently — in 1982 — Mennen Medical scored another “first” when it concluded a multimillion dollar sale of equipment to several Soviet hospitals, marking the first use of American-built patient monitoring systems in the U.S.S.R.

The key technology in the Mennen Medical line is the space-developed art of telemetry, in which instrument data is converted to electrical signals and relayed to a remote receiver where the signals are reconverted to display information. In patient monitoring, for example, heart readings acquired by an electrode are sent by wire to a telemetry transmitter attached to the patient's body, then relayed wirelessly to a display console at a central station, where a nurse can simultaneously monitor the conditions of several patients.

A typical Mennen Medical product is the telemetry-based VISTA Nurse Station, which presents cardiac waveforms and other clinical information on high resolution color video displays. Designed to provide a full range of patient information that is easy to read and easy to interpret, VISTA systems employ advanced display technology featuring color presentations; the colors indicate the relative urgency of the various monitoring messages, with bright red alerting the hospital staff to alarm conditions. VISTA Nurse Stations come in four, six and eight-patient versions, which can be combined to accommodate any number of patients.

Other examples of company products include the Horizon 2000 Monitor, featuring high capacity computation, analysis, storage and display power; the Horizon 2110 Neonatal Monitor for clinical monitoring of newborns in intensive care units; and the Horizon 9000, a highly sophisticated, fast acting computing system for the cardiac catheterization laboratory.

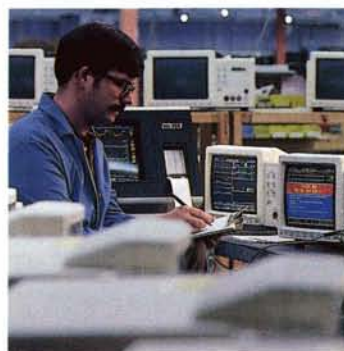
Mennen Medical's future looks bright to Herbert Mennen. The firm has been growing steadily in recent years, with sales growth of 10–15 percent annually, and, says Mennen, “I see no reason why that pattern won't continue.”



A Mennen software engineer compares notes with a hardware engineer.



Herbert Mennen (left center) with some of the staff of Mennen Medical Inc., a spinoff company that traces its origins to a research contract for an astronaut monitoring system.



A quality assurance technician performs a final inspection on a Horizon patient monitor.